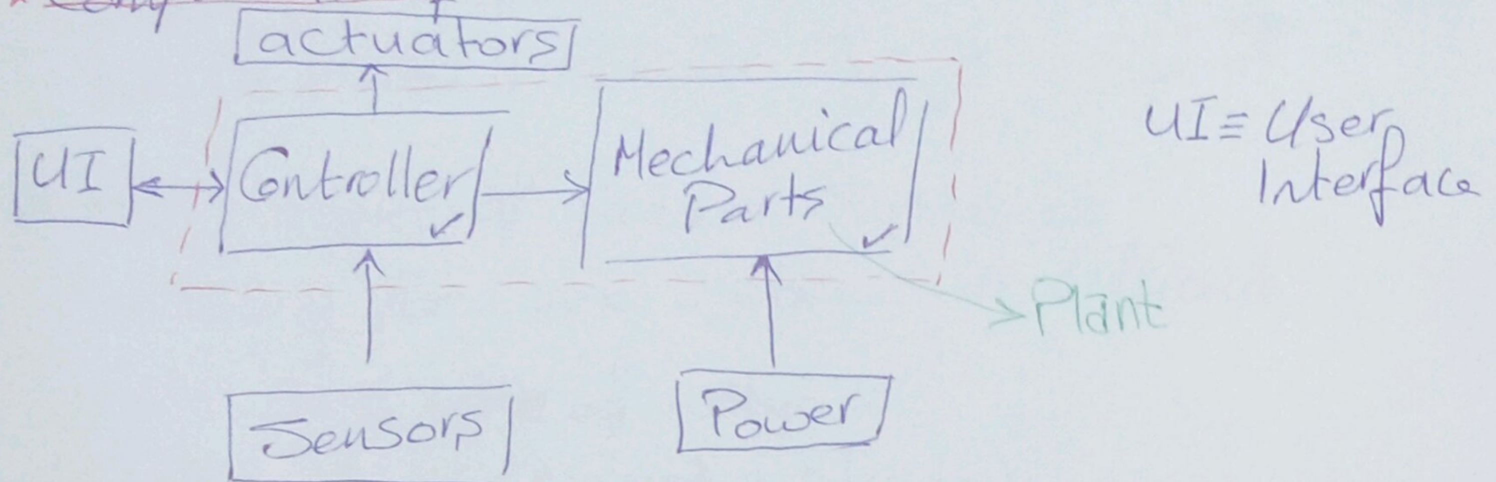
Robotics
(sec 1)

19/2/017

*** Robot:**

Reprogrammable Multifunction Machine

*** Components of Robot System:**



* Robot Configuration

* Manipulators → Robotic Arm

* Mobile Robots

* Mobile Manipulator → Car + Robotic Arm

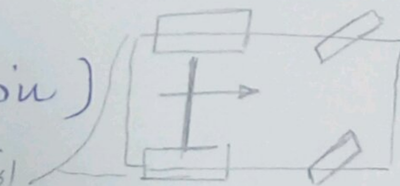
① Manipulators:
- links
- joints → مفصل
  - Revolute (مفصل الباب
  - Prismatic

Revolute ≡ servo motor
Prismatic ≡ Cylinder

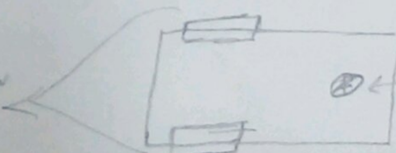
oil
air

② Mobile Robot: → يعني يتحرك

Body
wheel Constraints
(wheels Control the direction)



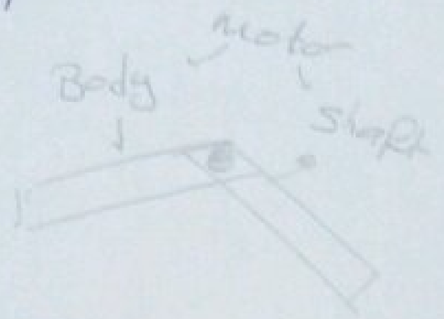
اتجاههم واحد



محرك الحركة

سرعتهم مختلفة عشان يتحكم في الإتجاه

Bensh Mark = test Case
ex: inverted Pendlium in Control



* Modeling (important step)
how to model a Robotic Sys.?

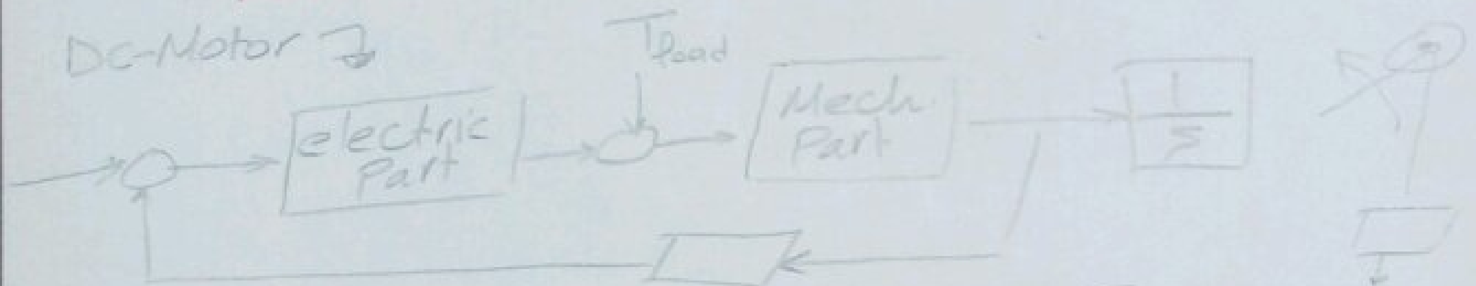
Multy degree of freedom Systems
modeling for these systems is difficult

ex: arm & bottle of water :D

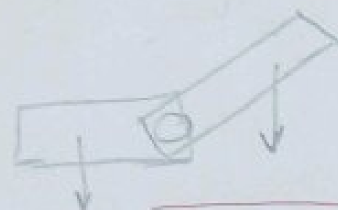
1 Kinematics (Geometric strudy)
2 Dynamics (Forces & Torques)

جسم بيتحرك حركة خطية بيأثر عليه قوة → Forces - Revolute
~ ~ ~ دورانية ~ ~ عزم → Torques - Prismatic

يهمنا جزء ال Kinematic



اما نتحكم في ال Position تاع ال Dc motor يبقى ال ~ ماله قيمه



* Planning
إني احدد مسار اللي الروبوت هيمشي
عليه دا ال Planning
. بعد كدا ال Control بيشوفه
Trajector → Path

* Control
كل motor ال Controller تاعه يتحكم في
زاويته - ثم تقسم إلى مجموعة Control أصغر
(علشان مسار الروبوت يمشي عليه)

DOF
kinematics

← ابسط انواع ال Control
نطلقه عليه
(independent joint Control)